24pZC-11 Measurement of charmonia at mid-rapidity at RHIC-PHENIX

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Measurement of heavy quarkonia (ψ, χ_c, Υ, etc.) is one of the most promising probe for the deconfined quark gluon plasma (QGP) created in relativistic heavy ion collisions. The heavy quarkonia will dissolve in the QGP by the color Debye screening and those yields will be suppressed.

Lattice quantum chromodynamics, however, indicates that the heavy quarkonia survive until well above the critical temperature.

There are competing effects which modify the yields of the heavy quarkonia in heavy ion collisions at RHIC, reduction of the initial yields by cold nuclear matter effects, destruction of the heavy quarkonia by interactions with thermal gluons, and enhancement of the yields due to coalescence of uncorrelated heavy quarks.

Since J/ψ has di-lepton decay channels and large production cross section, J/ψ is the most studied heavy quarkonium. While a large fraction of J/ψ comes from the feed down of χ_c and ψ' decays, this fraction has not been measured at the RHIC energy.

In this talk, the results of $J/\psi \to e^+e^-$ measurement in Cu+Cu collisions and the status of $\chi_c \to J/\psi\gamma \to e^+e^-\gamma$ measurement in $p+p$ collisions at RHIC-PHENIX will be presented, and J/ψ production in heavy ion collisions will be discussed.